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## *National Institute of Standards and Technology*

### Q&A: What Role for Government in Civilian R&D?

*The Cinderella choice of Congressional Democrats for a grander federal role in promotion of civilian technology is a small agency, the National Institute of Standards and Technology (NIST), formerly the National Bureau of Standards (NBS). At present, NIST is marking time as indecision reigns at the White House on the issue of "industrial policy." Meanwhile, newly installed at the head of NIST is John W. Lyons, a chemist who joined the agency in 1977 after 18 years as a research manager with the Monsanto Co. At NBS, Lyons founded and managed the National Engineering Laboratory and also served as Deputy Director of the Bureau. He spoke March 9 with SGR Editor Greenberg. Following is the text, transcribed and edited by SGR.*

**SGR.** *NIST has new industrial responsibilities but very little money to carry them out.*

**Lyons.** Yes. Our budget looks like a cut. If you look at the extra-mural programs, which include the Advanced Technology Program (ATP), the Manufacturing Technology Transfer Centers, and then some state extension service programs—if you look at that, there's a minus \$2.5 million for the Technology Transfer Centers, there's no change in the ATP program, and there's a minus \$1.3 million in the [industrial] extension program.

So, I get before a Congressional committee and they hit me with that, and they say, "This doesn't look like a very good start, Dr. Lyons. What do you think about that?" And

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I say the following: First of all, that the President's budget did put \$10 million in for ATP this time. Last year [the Administration] simply flat out disagreed [though the Congress appropriated \$10 million]. The [Administration] didn't want the program. This year, they support it in principle; so that's the first step you have to have. We've got OMB to agree to that. Same with the so-called Hollings Centers [to provide technology-transfer assistance for small manufacturers, named after the sponsor, Senator Ernest F. Hollings (D-SC)]. They were not budgeted [by the Administration last year].

**SGR.** *You've got a lot of budget juggling to do, since the responsibilities assigned by Congress and the money requested by the Administration don't match.*

**Lyons.** I'm not going to do the juggling. The Appropriations Committees are going to do it.

**SGR.** *What accounts for the budget situation?*

**Lyons.** The problem with this year's budget is simply that the Administration did not come to grips with it until very late. It's only been in the last couple of months that interest has been expressed. The Secretary [of Commerce, Robert Mosbacher] has gotten interested. He went down to the Hollings Center in South Carolina and both he and Senator Hollings listened to some presentations. The Secretary came here and was tickled to death with what he saw.

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## In Brief

The social and behavioral sciences are growing again about their subordinate status in the federal research-support system. With no homebase of their own, and only splinter shares of various agency budgets, they're seeking a better deal from the National Science Foundation, where they're submerged within the Directorate for Biological, Behavioral, and Social Sciences. The Directorate's budget this year is \$293 million, of which \$48 million is for "behavioral and neural sciences" and \$33 million for the "social and economic sciences."

*More money and consideration of a separate directorate are called for in the report of a group chaired by Linda Smith, Professor of Psychology at the University of Indiana. Presented to the Directorate's advisory committee last month, the breakaway concept is not favored by NSF Director Erich Bloch. Referring to past recommendations for boosting the social and behavioral sciences, Bloch recently told the House Science, Space, and Technology Committee that science benefits from fewer rather than more disciplinary bastions.*

Along with their other duties, federal science agencies are under Congressional orders to produce some 240 periodic reports of their activities, according to a draft report that's just come along from the long-forgotten 1985-87 Science Policy Task Force of the House Science, Space, and Technology Committee. "We have observed," states the draft, "that while some reports are widely disseminated and read, many others are placed directly into committee files and are rarely if ever retrieved, read or used."

*The draft report takes note, however, of gaps in the report business, stating that "no reports are currently required on progress of research in the field of organ transplants, projection of manpower needs in applied sociology, grants and contracts awarded under the sea grant program, facilities and construction by NSF grantees, and audit reports on NASA research grantees." Well, get to it.*

## ... Generic Research Avoids the "Political Thicket"

(Continued from Page 1)

He has gotten very enthusiastic about what we do and what we can do. Deputy Secretary [Thomas] Murrin had been out earlier and is more comfortable, I guess, with what we do, because Tom had managed Westinghouse's stuff for a very long time, so he can intuitively react to what we do. Then Allan Bromley [the President's Science Adviser] came on the scene, and Allan has expressed great interest in technology and strong support for NIST. So, there's beginning to be a group of people in the Administration that understand what it is Congress is driving at.

The next step, of course, is to see what the areas of agreement are and how that plays out in the real game, which is the budget game. There's a lot of unhappiness with the current budget proposal. I think it's kind of a risky time, because they may decide to take money out of the [NIST internal] laboratory increases, which are the first good solid increases we've had, and move it over to the outside program. A lot of us are worried about that. I think we're walking a tightrope right now. We really have to get the policy issue settled at the top.

**SGR.** *NIST came out of the Democratic interest in industrial policy, which is anathema to this Administration, as it was to the previous one. You're in a policy limbo.*

**Lyons.** It looks that way, but I don't think it's going to be that way. I find that NIST has great support among people like Senator [Warren] Rudman (R-NH), who's very interested in our core research, our laboratory research. And he's the ranking Republican on the Senate Appropriations Subcommittee [for NIST]. [Rep.] Sherry Boehlert (R-NY) and a number of the other Republican members on the House Science Committee have generally been supportive. It's almost been non-political on the House Science Committee for years.

But I think the issue is this whole business of picking winners and losers, and the question is how can you get out of that pickle. And I think NIST is able to get out of it very easily because of the way we have worked over the years. Congress decided to put these new programs in NIST because we have been the only federal lab with a mission to help industry. We've always worked with industry. I think the NIST programs by their very nature have in the past avoided this industrial-policy business, in the following sense: we work in supporting technologies where a piece of, say, measurement technology is useful to companies no matter where they are in the commercialization cycle. If you have to do a certain measurement on an integrated circuit, it doesn't matter whether you're in the lab perfecting a new circuit or whether you're out in the factory making a fairly routine one. You need the same technology. So, that is generic, it's shared by all the companies, they don't regard that as a profit-making lever, so they tend to share it. Because it originates here, it's shared by definition.

When you get into the development of product or process

technology, that's where the winners-losers issue gets interesting. There is a stage in any commercialization where information is generic. That is, I do a piece of work and it applies to a whole family of products, a whole family of companies. There's also a stage where it passes over some kind of invisible boundary and becomes proprietary and begins to look like it's just this process that this company has developed. That's where we want to stop. We want to stay pre-competitive and generic. We have generally done that.

Now there are two reasons why I would like to keep it that way. One is as you go down the commercialization curve, the costs go up really exponentially. The other is that as you move down, you get in this political thicket that I don't see any way out of, in the long term or the short term. So, I'm very comfortably staying back there. I think that keeps us out of the policy arguments that would rage if we did, for example, what DARPA's [Defense Advanced Research Projects Agency] doing on flat [imaging] panels—issue contracts that say please deliver me a product.

**SGR.** *What you've described is more of the same traditional mode that the old Bureau and now NIST have been successful with. Do these times call for a new formulation in how you do business?*

**Lyons.** They certainly call for much more collaborative work with the industrial private sector. Obviously, we're walking a fairly fine line. But I think NIST could, for example, join with industrial consortia in programs where NIST staff might not even be here; they might be at a laboratory where you have government and industry workers side by side working in pre-competitive, or generic, technology development.

One of the things that people have been impressed by in the Japanese model is that there's always a "mirror" program in industry. So, if there's a government-funded program, they insist that the industrial partners have their own counterpart program which can go to market quickly.

**SGR.** *Will you adopt that method?*

**Lyons.** No, I'm not going to copy the Japanese model, (Continued on Page 3)

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## Shunned by Reagan, NIST Gaining Bush Support

A reflection of Democratic discontent with the Reagan Administration's resistance to direct federal support for civilian technology, NIST was fashioned in August 1988 out of the venerable National Bureau of Standards (NBS) under provisions written into the Omnibus Trade and Competitiveness Act. The Act also sought to raise the political visibility of civilian technology by creating a Technology Administration, with an Under Secretary at its head, at NIST's parent agency, the Department of Commerce.

The Reagan Administration tolerated the new creations as irremovable attachments to the sought-after trade legislation. But regarding NIST as a sneak route to "industrial policy," the White House used the no-money ploy to negate the three new industrial programs that the legislation assigned to the agency:

- The Advanced Technology Program, to promote the formation of high-tech industrial research consortia;

- Manufacturing Technology Centers, to help transfer technology to small manufacturing firms, and

- The Technology Extension Program, roughly on the agricultural extension model, also to assist manufacturing firms.

The lame-duck Reagan Administration did assign the director of the old NBS, Ernest Ambler, to the new Under Secretary post at Commerce, leaving an acting Director to head NIST for nearly a year. Ambler stayed on for the first four months of the Bush Administration

and then left—and, only now, nearly one year later, has the Bush Administration replaced him, with the appointment of Robert M. White, an industrial electronics executive (see P. 6).

Meanwhile, the Bush Administration has been very slowly budging from its predecessor's refusal to finance the new programs at NIST. For fiscal years 1989 and 1990, Bush sought no funds for the programs. Led by restless Democrats, Congress provided \$7.5 million for the Manufacturing Technology program for FY 1989; for FY 1990, Congress repeated that appropriation and also provided \$10 million for the Advanced Technology Program and \$1.3 million for Technology Extension. The Administration, however, is coming around after two years of zeros. For the coming fiscal year, it has requested \$5 million for the Manufacturing Program and \$10 million for Advanced Technology.

One great difficulty, however, is that the traditional NBS programs at NIST have gone for over a decade without any purchasing-power increase. For next year, the Bush Administration is seeking to raise the direct appropriation for NIST by \$36 million, to a total of \$198 million (industrial contracts and jobs for federal agencies nearly double that amount). At NIST there are many claimants for the budget increase sought by Bush, and strife is mounting there over the division between old internal responsibilities and the new industrial programs.

### NIST (Continued from Page 2)

because I don't think you can do that. Our culture and our ways are so different. But we can simply learn from some of the pragmatic things that they do. And I've been very interested in the Key Tech [Key Technologies Center] program. The program was set up as a result of the privatization of NTT [the government telecommunications monopoly]. When NTT went private, the government held a lot of stock, and there's a very large dividend cash flow, which the government cleverly didn't put in the treasury, but instead used to fund this Japan Key Technologies Center. The Center takes proposals from consortia, boards of directors, what have you. They write a plan, they define the needs, they go to Key Tech for support, up to 70 percent, which is a little higher than ATP, which is 50 percent. And then they set up someplace.

In the case of the opto-electronics program, they actually built a building. They took the gang that was in the original MITI [Ministry of International Trade and Industry] large-scale program and set some of them up there along with industrial researchers. There are a whole series of these things. I think that's a pragmatic program just in the way they decided to handle that dividend business. We'd never do that. We have a tendency to channel that kind of stuff to

the Treasury, and with the deficit problem, even more so. But they said, no, let's use this for a different purpose.

What I like about that is that at least on paper, the initiative is with industry. They have to form a consortium, they have to get their mechanics together, they have to do their needs survey, and to propose something to the Key Tech people. That's more of an American sort of way of doing business. Secretary Mosbacher keeps talking about industry-led programs. There's a way to get away from the industrial-policy accusation. And I think that's essential if we're going to move forward.

**SGR.** *Is Sematech [a consortium of firms for research on semiconductor manufacturing, for which the Defense Department provides \$100 million a year] a model of the future?*

**Lyons.** Sematech was exactly like that. The industry defined its problem. In parallel, the Defense Science Board did, too. But, setting that aside, industry assessed its problem, made the proposal, and after a lot of fuss, they got huge funding and continue to get that. I think if Sematech were proposed today, it would be proposed to the ATP program. When Sematech was proposed, the ATP program was in draft legislation, and a lot of folks said, "Gee, if we just had that, maybe that would shape the ATP thing." But that

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## ... "Starvation Cases" in NIST Industrial Programs

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clearly was industry-led, and if you look at the NACS [National Advisory Committee on Semiconductors] report, that surely is an industrially led proposal. Whether it goes anywhere or not is another matter. But it's a good example of their coming together, saying here's what we think we need, and making a proposal.

**SGR.** *You said before that in terms of formulating a program, you're walking along a very fine line. What's on one side and what's on the other?*

**Lyons.** On one side, if you're not bold enough, you may not get anyplace, and from a political point of view it will look like all we're doing is more of the same. The other side is that if you go too far, and get into what too many people think is an industrial policy, then you could lose it. Somewhere, there's a balance. One of the problems with NIST is that, because it's been flat in a budget sense, and the demand has been going up at some pretty good clip, because complex technical systems keep on growing in the economy, we have been relatively less responsive each year to the demands we get for services. So, one thing we've got to do is get back on some kind of proportional growth path if we're not going to become irrelevant.

**SGR.** *What are some of the areas that have been neglected because of the money situation?*

**Lyons.** Probably the largest demands on us are in electronics and computers, electronics broadly defined to include photonics. In photon material, which some people call optoelectronics or light-wave technology, we had been working on the fiber problem for some time with industry. But it became clear in the early '80s that there was a whole series of services that industry needed to build components—modulators, and multiplexes, and switches of various kinds. And we needed to get going, because we were behind. And so we did a very careful study and made a proposal for a \$10 million program, which is in the NIST frame of reference, a good size program. And we have been working that damn initiative for years. We worked it first internally, and then we worked it with the Department, and then with OMB.

We finally got it on the Hill five years ago, and we got little bits and pieces of funding. The Hill would say this is very important, but when the crunch would come, it would get sawed back to one year at \$900,000 and one year that's a little over a million. We're still trying to get this program. The budget this year has \$5.5 million for it, and we'll settle, if we can get that, plus a couple of million we've gotten before, and we'll end up with \$7.5 million. That's not what we thought we needed, but it's there.

Well, there's a case where, very painfully over five years, we put a program together that should have been just plain funded right then and there, because it was urgent. And that technology is sweeping the world, and our industry needs help. That's one example.

In our computer area, now called the National Computer Systems Laboratory, we have two kinds of programs. One is the set of problems characterized by the OSI [Open Systems Interconnection] and the ISDN [Integrated Services Digital Network], where we need protocols. Those are systems issues. You can't build a successful national network based on integrated voice, data, and video without a complete consensus on the protocols.

What we now have is people building switches that purport to handle the three things, but they can't talk to each other. Well, we're the guys that are supposed to orchestrate the reaching of a consensus, and that means you need a laboratory, you need to understand all these things. It's a pretty complicated business. And you need some money. This year, we're in for \$1 million, after all this time. People have been trying to build ISDN switches for most of this decade.

So, there's another kind of starvation case. It goes on all over the place. We've had a program on microwaves for years, but, for heaven's sakes, the microwave business is now into integrated microwave circuits. And we only last year, I think, finally got some outside money, not appropriated, to start work on the so-called MMIC [monolithic microwave integrated circuits] devices, which are of great interest to a lot of people. We know we are deficient. We know that we need to have programs. We've been told by our clients. And it just can't get up the list. It's not as interesting as advanced semiconductors and ISDN and light waves and so on. So, it's down lower, and with the squeeze that's on us, we'll be lucky if we get it in the next budget.

**SGR.** *You're talking about multi-billion-dollar industries that are being hurt for lack of a few million dollars.*

**Lyons.** Part of it is our fault. We can't say we've done the world's greatest job with our message. It did get through to some people on the Hill, to the extent that they wrote this new legislation, which is the first step. It got through to Bob White [President of the National Academy of Engineering], who made a very good speech a couple of years ago, where he mentioned that NIST seemed to be more of a hopeful sign in the spectrum of possibilities. So, we've tried in some areas to get the message through. But we're one of the better kept secrets in the government. Mosbacher decided that we were a big secret and that I need to do something about it. So, I've been actually out of the office almost since I got up here, talking to people downtown, trying to move it. But there's a tremendous difference of opinion in Washington. Senator [John] Heinz (R-Pa.) told a Harvard Business School gathering last year that there's absolutely no consensus on what to do. Most people agree there's a problem, but what to do about it is still not clear.

**SGR.** *The term "industrial policy" is used as though there's an agreed definition of it. When you use the term, what do you mean?*

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## ... DARPA and NIST: Different Problems, Options

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**Lyons.** My perception of what it means is that the government, in its infinite wisdom, can make statements about marketplace needs in place of industry, and therefore makes its own assessment. In some respects, it's not a very accurate term. Because you hear it used as though we don't have any kind of industrial policy, but of course, anyone who has read any history knows that this country got into the railroad-stimulation business and the agricultural-stimulation, and NACA [National Advisory Commission on Aeronautics, predecessor of NASA] helped put aeronautics on the map. But all those were perceived as in the national interest, and we do those things deliberately by statute. There is still a strong feeling that industry should do this job, and industry should correct its own problems. And I think that the Administration still feels that way. But they seem to be agreeable to our doing things that are needed by all hands, as long as we don't do things that seem to favor a company, which we try never to do.

**SGR.** *The comparable government institutions in Japan and Europe do a good deal more than you do.*

**Lyons.** Yes. I think I would term that the corporate state approach. It's a different approach to everything. If you think about how standards and certification are done in Europe, they're done by the government. In our country, standards are done by the ASTM [American Society for Testing and Materials] and certification is done by Underwriters Laboratory. The government, and this institution, stays out of that as much as it can. In general, we have this decentralized, pluralistic society. The real question is how can you compete internationally with our kind of society against these other kinds.

**SGR.** *Other countries have devised new institutions and methods. For example, Europe has the Eureka program [that encourages the formation of and finances high-tech industrial consortia].*

**Lyons.** Take HDTV [high-definition television]. HDTV is a complex system problem. If you're going to do it, you've got to create protocols and standards and agreements at the top, where you fit the studio equipment and the receivers and the transmission system under an umbrella. And the question is who is supposed to drive that process. In other countries, they don't worry about that, they just drive it. The Japanese, of course, have been doing their thing, and in Europe they're doing a different thing. And we are trying to have that done by some private efforts, and there was a push a year ago to have the central government come in and get hold of that thing. And nothing has come out of that yet, except an awful lot of meetings on the Hill, which a lot of us go to. That one hasn't been answered.

We ran into the same thing in factory automation—that's a system problem. We took hold of it because there was an absolute vacuum, and then when the Navy joined us, we were able to put together a pretty effective program. That

wasn't done in any policy sense. We never really had a policy talk about it. We just did it. It may be the only way these things can proceed is when someone jumps in. I think DARPA does that often. They just jump in and address the problem. And they very often are allowed to do that.

**SGR.** *Is there any reality to the idea of NIST eventually evolving into a civilian DARPA?*

**Lyons.** I don't think so. DARPA has characteristics that are really different from a civilian agency, no matter how it plays out. DARPA has its own customers. It talks to the services. They tell them what they need and then some fraction of DARPA's work responds to that. In the case of the civilian economy, the market is the universe; you have no way of doing the kind of rifle-shot assessment that the military can do with their own business. I see the civilian agency staying out of that business of acquiring products. That's not all that Craig Fields [Director of DARPA] is doing. In some cases, he actually pulls products through the system by a purchasing contract. I don't see the civilian program doing that. Certainly, the ATP program is not planning to do that.

**SGR.** *DARPA has over five times your budget.*

**Lyons.** Craig Fields told me that the secret of doing a program like DARPA or like our ATP is, one, lots of money; two, a fair number of very bright program managers, and, three, a very fast, flexible bureaucratic process. We have the smart people.

## A Gloomy R&D Budget Note

A warning of a difficult year for science funding is contained in a letter from Rep. Bob Traxler (D-Mich.), Chairman of the Appropriations Subcommittee in which NASA and NSF compete for funds with the Veterans and Housing Departments and the EPA. Writing to Robert Roe (D-NJ), Chairman of the House Science, Space, and Technology Committee, Traxler rejected a request for funding the Space Station on a multi-year basis to eliminate fiscal shifts that have dismayed NASA's foreign partners in the venture.

Referring to NASA's international commitments, Traxler wrote that "we also have made a commitment to take care of our veterans. . . . We also have a commitment to house in safe, sanitary and decent dwellings America's poor. We have a commitment to help solve the serious homeless problem, and we have a commitment to clean up over a thousand Superfund sites, and so on and so on.

"The fact is that we have probably made far too many commitments—given our natural resources," Traxler stated, adding, "Thus, to single out the Space Station for multi-year funding is difficult."

The letter, dated February 26, noted that "By singling out one programmatic area, we are taking that particular function out of the priority scramble. . . and that doesn't seem quite fair, given today's budget climate."

## China Puts Strict Curbs on Students Going Abroad

Long before last spring's student-led pro-democracy upheavals, the Chinese government was expressing annoyance at the reluctance of young Chinese to return from studies abroad. Now well supplied with evidence of the political unreliability of its Western-oriented youth, the government has established a web of restrictions around eligibility for foreign studies.

With limited exceptions, only students over 35 years of age are allowed out of the country and enrollments are concentrated in the applied sciences. Doctoral-level studies will be concentrated in Chinese universities. Undergraduate studies abroad are barred and students must work for five years after graduation to be eligible for foreign studies. Needless to say, applications to go abroad must be accompanied by various certifications of political purity. Even so, the allowed time abroad is generally limited to one year, scant time, the government apparently hopes, for making political connections or sinking roots. Students privileged to go abroad must check in with the Chinese Embassy, which has been instructed to maintain frequent contact with its countrymen.

The new rules, spelled out in a circular issued in February by the State Education Commission, apply to students sent abroad at government expense or by their work units, i.e., place of employment. Self-supporting and work-unit students who want to go abroad without following the five-year work rule will be required to repay the cost of their education. The sums differ from work unit to work unit, but the amounts can run as high as several thousand dollars, a stiff price in a country where per capita income was officially reported at \$300 in 1987.

Among the Chinese students and scholars already in the United States, especially those middle-aged or older, wait-and-see has become the prevalent mood. Most actually feel a strong desire to return to China. But those who were openly associated with the student movement last spring are fearful of what might await them. The fear is strong, as evidenced by a recent incident in Denver, where Chinese students, attending a talk by a student leader who fled Beijing last spring, wouldn't permit photographs of the audience. They feared retaliation against families still in China or against themselves if they returned.

President Bush, in vetoing legislation last year that would have protected Chinese students against enforced return, gave assurances of safe haven for the approximately 40,000 Chinese students in the US at the time. So far, they have all been permitted to remain, even following completion of their studies. But the Chinese Embassy continues to keep a watch on leaders of the student opposition. Refusal of passport extensions is one method of reminding the students that Big Brother is watching.

While the Beijing government has assigned the highest priority to maintenance of orthodox political control, it nonetheless continues to acknowledge China's dependence

on foreign science and technology for achieving its modernization goals. In December, Commissioner Li Tieying of the State Education Committee reaffirmed the importance of foreign educational ties, stating: "We will continue with and increase international educational exchanges and cooperation."

But he added that the continuation would be in accordance with "the guiding principle of sending students abroad in the light of the country's needs, guaranteeing students' political and academic qualities and keeping their studying areas consistent with application."

The regime, however, faces the difficulty of a decline in the number of ideologically and culturally safe destinations for its students. In both respects, the US is clearly seen as dangerous for Chinese youth, Western Europe is little different in this regard, and the old Soviet bloc is toppling into western ways. The chosen solution is to restrict foreign studies to older students and to limit their time abroad to merely one year.

The new strictness may well help shore up Beijing's shaky rulers, but it is not likely to contribute greatly to China's scientific and technological advancement.

## Job Changes & Appointments

After months in the sluggish White House clearance mill, the nomination of **Robert M. White** for Under Secretary of Commerce for Technology was sent to the Senate March 20. Reflecting Senatorial dismay over the Administration's neglect of the position, Senator Ernest F. Hollings (D-SC), Chairman of the Commerce, Science, and Transportation Committee, called a quickie confirmation hearing March 26, and, amid friendly questioning, White sailed through. Senate confirmation is expected soon. White, not to be confused with the name-sharing President of the National Academy of Engineering, is a veteran of the electronics industry (Xerox and Control Data) and comes directly from the Microelectronics and Computer Technology Corporation, an industry consortium, where he is Vice President and Director of the Advanced Computing Technology Program.

**Charles Edwards**, Commissioner of the Food and Drug Administration, 1970-73, has been appointed by the Secretary of Health and Human Services to head a committee assigned to examine and prescribe for FDA's numerous woes. Edwards is President of the Scripps Clinic and Research Foundation, La Jolla, Calif. A separate committee is to be established to recommend candidates for the post of FDA Commissioner, vacant since **Frank E. Young** was forced out last year.

**Hans Peter Hertig** will complete a four-year tour in June as Counselor for Science and Technology at the Swiss Embassy in Washington. A successor has not yet been named.

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## More In Print: Infrastructure, Health, Materials R&D

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**Rebuilding the Foundations: A Special Report on State and Local Public Works Financing and Management:** (GPO Stock No. 052-003-01179-4; 125 pp., \$8.50), from the Congressional Office of Technology Assessment (OTA), a look at the nationwide spread of disintegrating roads, falling bridges, etc., which, OTA explains, rank low on national, state, and local spending priorities, behind Medicaid, defense, debt reduction, education, and jail construction (science is not mentioned). OTA calls for greater reliance on user fees, increased state and federal assistance, especially to help meet environmental requirements, and federal help for regional planning.

Also from OTA: **Indian Adolescent Mental Health** (GPO Stock No. 052-003-01175-1; \$3.50), prepared for the Senate Select Committee on Indian Affairs, for which legislation is being drafted on mental-health needs of American Indians and Alaska Natives, says that ranks of mental-health professionals are extremely thin in relation to comparatively high incidence of suicide, depression, drug use, etc., among Indian adolescents. (In the works at OTA: a comprehensive report on adolescent health, scheduled for publication in September.)

Order OTA publications from: USGPO, Superintendent of Documents, Washington, DC 20402; tel. 202/783-3238

**Advanced Materials: Policies and Technological Challenges** (187 pp., \$40), by the Organization for Economic Cooperation and Development (OECD), describes advanced-materials research programs and industrial strategies in 17 of the OECD countries and calls for more collaboration, by nations, industry, and universities, plus development of international standards for test methods and products.

Order from: OECD Publications and Information Center, 2001 L St. NW, Suite 700, Washington, DC 20036-4095; tel. 202/785-6323. Also available at bookshops and OECD offices in major cities throughout the world.

### Job Changes (Continued from Page 6)

**Thomas Detre**, President of the Medical and Health Care Division, University of Pittsburgh, has been appointed Chairman of a newly created Advisory Committee for Health Research Policy at the Department of Veterans Affairs. The Committee held its first meeting February 28.

**Michael Gough** has been appointed Director of the Center for Risk Management at Resources for the Future. Gough previously was with the Congressional Office of Technology Assessment.

**Allen Hammond** has been named Director of the Program in Resource and Information Management at the World Resources Institute, where he has been editor of *World Resources Report*. Hammond was founding editor of the AAAS's now-defunct venture into pop magazine publishing, *Science 80-86*.

### SSC Wins Committee Okay

The Superconducting Super Collider (SSC) passed a crucial hurdle last week when the House Science, Space, and Technology Committee voted, 32-14, for an authorization bill crafted to neutralize doubts about the realism of cost estimates for the mammoth project. The bill capped the federal share at \$5 billion; Texas, site of the SSC, is in for \$1 billion, and hoped-for foreign contributions are to provide the rest. The vote doesn't guarantee the future of the SSC, but, with supply contracts ready to go out to 37 states, the political backing is indeed formidable.

The doubters, led by Rep. Sherwood Boehlert (R-NY), have ample cause to question the cost estimates produced by the Department of Energy, since the price recently rose from \$5.9 billion to \$8 billion. In addition, DOE's frequent assurances of substantial foreign financial support for the SSC have not materialized; in fact, D. Allan Bromley, the President's Science Adviser, recently acknowledged that support from Europe is unlikely, though he expressed optimism about Japan coming in.

The winning bill was a blend of a measure introduced by the SSC's leading backer, Chairman Robert Roe (NJ), and the SSC's increasingly isolated leading skeptic, Boehlert. Roe, eager to appear tough on the SSC's managers, specified in his bill that the technology for the SSC's troublesome magnets—main source of the cost increases—must “be successfully demonstrated before the final 80 percent of the funding for the project is released.”

Boehlert took the position, and Roe quickly came around, that no digging should take place until the DOE certifies that a prototype magnet design is acceptable and that industry can produce it. The bill also calls for creating the post of Under Secretary for the SSC within DOE. Next stop is the floor of the House, which last year voted SSC startup funds.

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## In Print: Vital Statistics, Anti-Biotech, Space Data

*The publications listed are obtainable as indicated—not from SGR.*

**Health United States: 1989 and Prevention Profile** (GPO Stock No. 017-022-011-04-02; 290 pp., \$19), combined in one volume, two periodic reports from the Department of Health and Human Services (HHS): the first, 14th in an annual series, is a valuable presentation of basic health statistics—mortality, morbidity, expenditures, utilization, etc.—clearly presented in 131 tables that track trends and offer some international comparisons; the second report, fourth in a triennial series, states the federal government's admirable goals for disease prevention and health promotion, but the text is disengaged from the political and economic realities that afflict health policy, e.g.: on reducing death by homicide—the leading killer of young blacks—*Prevention Profile* states: "By 1990, the number of guns in private ownership should decline by 25 percent." Indeed it should, but how? The report does not say.

Order from: USGPO, Superintendent of Documents, Washington, DC 20402; tel. 202/783-3238

**Biotechnology's Bitter Harvest: Herbicide-Tolerant Crops and the Threat to Sustainable Agriculture** (69 pp., no charge), another omen of battles to come as agro-biotech products are poised to leave the lab and head for the fields. This report, by the Biotechnology Working Group, comprising officials of various organizations, including the Environmental Defense Fund and the National Wildlife Federation, says that at least 27 agro-chemical firms and many government agencies are working to develop plants that can tolerate heavy doses of herbicides. Calling this "a wrong direction for agriculture," the authors ask Congress to ban use of US Department of Agriculture funds for such research. Little chance of that, but the regulatory process and public fears provide many opportunities for derailments.

Order from: National Wildlife Federation, 1400 16th St. NW, Washington, DC 20036; attn. Jane Rissler; tel. 202/797-6800.

**Space Operations: NASA Is Not Properly Safeguarding Valuable Data from Past Missions** (GAO/IMTEC-90-1; 76 pp., no charge), by the General Accounting Office (GAO), investigative service for the Congress, requested by Chairman Robert Roe (D-NJ), House Science, Space, and Technology Committee, confirms rumors of many years' standing, saying that "hundreds of thousands of tapes containing space data are stored under deplorable conditions," including lack of humidity and temperature control, fire protection, security, backups. Referring to the tapes as "a significant national resource that must be safeguarded and preserved," GAO notes that many have not been "fully analyzed." In response, NASA acknowledged "room for improvement," but said the GAO report "lacks balance." It may be assumed that in these hard times, caring for residues of past missions does not rank high in NASA's priorities.

Also from GAO: **Alternative Agriculture: Federal Incentives and Farmers Opinions** (GAO/PEMD-90-12; 95 pp., no charge), another manifestation of politics' growing disquiet with high-cost, high-input agriculture, this report was requested by Rep. E. (Kika) de la Garza (D-Tex.), Chairman, House Agriculture Committee, and Rep. George Brown (D-Calif.), an Agriculture Subcommittee Chairman. Under "Principal Findings," the GAO states: "The farm program supports crops that tend to require high agricultural inputs and are associated with high rates of soil erosion. Other less-erosive and less-agricultural-dependent crops receive little government support." The report also notes that about 60 percent of the farmers surveyed reported they were deterred from other crops by fears of losing income supports.

Order GAO reports from: USGAO, PO Box 6015, Gaithersburg, Md. 20877; tel. 202/275-6241.

**Alternative Agriculture** (448 pp., softcover, \$19.95; hardbound, \$29.95), a major report on the subject, was published last year by the National Academy of Sciences.

Order from: National Academy Press, 2101 Constitution Ave. NW, Washington, DC 20418; tel. 202/334-3313

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